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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/743,941	12/23/2003	Hui-Ling Lou	MP0354	9405

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EXAMINER	
BURD, KEVIN MICHAEL	

ART UNIT	PAPER NUMBER
2611	

MAIL DATE	DELIVERY MODE
07/11/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/743,941	LOU ET AL.	
	Examiner	Art Unit	
	Kevin M. Burd	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 April 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-156* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9,12,14-30,33-55,58-76,79-101,104-122,125-139,141-144 and 146-153* is/are rejected.

7)☒ Claim(s) *10,11,13,31,32,56,57,77,78,102,103,123,124,140,145 and 154-156* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

1. This office action, in response to the amendment and remarks filed 4/8/2008, is a non-final office action.

Response to Arguments

2. Applicant's arguments with respect to claims 1-147 have been considered but are moot in view of the new grounds of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-3, 8, 12-15, 19-21, 24-26, 28, 29, 33-49, 54, 58, 59, 61, 65-67, 70-72, 74, 75, 79-95, 101, 104-109, 111-113, 116-118, 120, 121, 125-139, 143, 144 and 148-150 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sampath et al (US 6,922,445) in view of Edwards et al (US 2004/0059825).

Regarding claims 1, 8, 20, 21, 24, 25, 28, 40, 42-47, 54, 66, 67, 70, 71, 74, 75, 86-93, 100, 112, 113, 116, 117, 120, 121, 132-138, 149 and 150, Sampath discloses a wireless MIMO communication system comprising a RF transceiver that includes multiple antennas (figure 1). A quality parameter is selected (abstract) and the quality parameter is determined in the receiver (column 8, line 61 to column 9, lines 17). The

quality parameter is compared with an acceptable level and channels that do not meet that acceptable threshold are deactivated (column 9, lines 18-45). By deactivating channels of unacceptable quality, the transmission of data can be optimized for highest throughput (column 11, line 65 to column 12, line 6). This dynamic adjustment of the throughput is the dynamic adjustment of the bandwidth. The device that adjusts the number of channels is the link adaptation module. This is done in a rich scattering environment as required by the spatial multiplexing (figure 3) and will comprise completely uncorrelated antennas in this rich scattering environment. This process and device is based on that correlation determination. Sampath does not explicitly disclose the link adaptation module is found in a MAC device. Edwards discloses medium access control in a wireless network. A link quality assessment process uses MAC based hardware components and works in the MAC layer. It is effective with any target station and should have an insignificant effect on data throughput (paragraph 0084). Software MAC components also determine the transmit power and data rate at which the link is viable (paragraph 0083). For these reasons, it would have been obvious for one of ordinary skill in the art at the time of the invention to utilize the MAC layer device disclosed by Edwards in the device of Sampath.

Regarding claims 2, 3, 29, 48, 49, 72, 94, 95, 118 and 148, Sampath discloses receiving information from the receiver regarding the quality of the channels and which channels are to be used for the transmission (column 7, line 27-36).

Regarding claims 12, 19, 26, 33, 41, 58, 65, 79, 104, 111 and 125, Sampath discloses a quality parameter is selected from among a SNR (column 3, lines 52-54).

Regarding claims 13-15, 34-38, 59, 61, 80-84, 105-109, 126-130 and 143, as stated above, Sampath discloses channels are deactivated when the quality level of the individual channel is unacceptable. This is done to optimize the throughput of the data.

Regarding claims 39, 85 and 131, Sampath discloses the transmission rate or throughput of data will vary depending on the modulation and coding rates used in each of the streams (column 6, lines 35-37).

Regarding claim 139, Sampath discloses spatial multiplexing is used in the system and spatial multiplexing operates in a rich scattering environment.

Regarding claim 144, Sampath discloses optimizing the throughput of the system in a rich scattering environment.

4. Claims 4-7, 9, 16-18, 22, 23, 27, 30, 50-53, 55, 30, 62-64, 68, 69, 73, 76, 96-99, 101, 106, 108-110, 114, 115, 119, 122, 141, 142, 146, 151 and 152 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sampath et al (US 6,922,445) in view of Edwards et al (US 2004/0059825) further in view of Mukkavilli et al (US 2006/0111148).

Regarding claims 4-6, 9, 27, 30, 50-52, 55, 73, 76, 96-98, 101, 119 and 122, the combination of Sampath and Edwards is disclosed above. The combination does not disclose a channel rank signal is feed back to the transmitter. Mukkavilli discloses the transceiver shown in figure 1. Mukkavilli discloses antenna responses are calculated for each antenna element. The antenna responses are ranked and a subset of the set of the antenna responses is selected in rank and subset unit 226 (paragraph 0003). The antenna response is calculated by using correlation. In the correlation a known pseudo-

random spreading code is correlated with the received signal (paragraph 0004). The channel state information at the transmitter can enhance system performance significantly (paragraph 0007). For this reason, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine the teaching of Mukkavilli into the combination of Sampath and Edwards. The increased performance will allow the system to operate more efficiently and effectively.

Regarding claims 7, 22, 23, 53, 60, 62, 63, 68, 69, 99, 106, 114 and 115, Sampath discloses the quality parameter is selected (abstract) and the quality parameter is determined in the receiver (column 8, line 61 to column 9, lines 17). The quality parameter is compared with an acceptable level and channels that do not meet that acceptable threshold are deactivated (column 9, lines 18-45). By deactivating channels of unacceptable quality, the transmission of data can be optimized for highest throughput (column 11, line 65 to column 12, line 6). This dynamic adjustment of the throughput is the dynamic adjustment of the bandwidth. The device that adjusts the number of channels is the link adaptation module. This is done in a rich scattering environment as required by the spatial multiplexing (figure 3).

Regarding claims 16, 17, 108, 109, 141, 142, 151 and 152, as stated above, Sampath discloses channels are deactivated when the quality level of the individual channel is unacceptable. This is done to optimize the throughput of the data.

Regarding claims 18, 64 and 110, Sampath discloses the transmission rate or throughput of data will vary depending on the modulation and coding rates used in each of the streams (column 6, lines 35-37).

Regarding claim 146, Sampath discloses optimizing the throughput of the system in a rich scattering environment.

Allowable Subject Matter

Claims 10, 11, 13, 31, 32, 56, 57, 77, 78, 102, 103, 123, 124, 140, 145 and 154-156 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M. Burd whose telephone number is (571) 272-3008. The examiner can normally be reached on Monday - Friday 9 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C. Payne can be reached on (571) 272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kevin M. Burd/
Primary Examiner, Art Unit 2611
7/6/2008